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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the network photo service system which provides the digital photograph services including print service on a network.

[0002]

[Description of the Prior Art]Conventionally, as one gestalt of digital photograph service, the user's digital image is kept to system of the purveyor of service (registration), and the network photo service which receives a print order etc. via networks, such as the Internet, is known.

[0003]In such service, if registration of a digital image is requested to a lab, for example at the time of film development, the photograph recorded on the film will be digitized in a lab or a service center for exclusive use, will be kept by system of a purveyor of service, and will be further exhibited on a network. By accessing system of a purveyor of service via a network, the user can peruse a registered picture or can perform a print order about a registered picture.

[0004]In many cases, the above systems are carried out as a concentration type system which processes storage of a picture, public presentation, registration of a print order, a print output, etc. at one place.

The photoprint created by the print order is delivered by the service store etc. which the user specified as a receipt location.

However, since delivery takes time, the print service provided by a concentration type system is in the tendency for a delivery date to become long.

[0005]On the other hand, in Japanese Patent Application No. No. 266569 [ nine to ]. The server computer connected to the network at the mini-laboratory etc. The server computer which installed (a laboratory server is called hereafter) and installed in the service center which accepts an order. The high-resolution image data used for the ordering information received from the user or a print output from (a center server is called hereafter) to a laboratory server is

transmitted, and the distributed system performing a print output in each lab is proposed.

[0006]To the Japanese Patent Application No. No. 266569 [ nine to ], each laboratory server keeps a high-resolution image data, and the gestalt which receives only ordering information from a center server and performs a print output is also proposed. In this case, since the center server does not need to keep a high-resolution image data, it can keep the low resolution image data only for an inspection, and can also perform public presentation of a picture, and reception of a print order using this.

[0007]By performing a print output in a lab, the above-mentioned distributed system abolishes the conventional delivery process, shortens a delivery date, and aims at the increase in a user by making network photo service easier to use.

[0008]

[Problem(s) to be Solved by the Invention]In the above systems, there is a limit in the number of the pictures which can be kept irrespective of a concentrated type and distributed type. On the other hand, since in many cases it is for several months that the extra copy order of a photograph, etc. are performed after the photograph is taken, the thing beyond it to do for period storage cannot necessarily say the registered picture as necessity.

[0009]For this reason, in the above network photo services, it decides on the storage limitation of a picture beforehand between a purveyor of service and a user, and registration may usually be erased by a purveyor's of service judgment about the picture which passed over the term in many cases.

[0010]However, when the users of service increase in number by the appearance of the above distributed system and each user's use frequency increases further, management of storage limitation and the elimination work of the picture which passed over the term serve as a burden remarkable for the system administrator and operator by the side of a purveyor of service.

[0011]Especially in the gestalt in which image data is kept by the laboratory server as mentioned above, when the same [ the data of a laboratory server, and the data of a center server ], in order to have to eliminate, he needs to stay in touch between a service center and a lab, and a system administrator's etc. burden becomes still larger.

[0012]This invention includes in a system the function which eliminates from a system the picture in which storage limitation went out efficiently in view of the above-mentioned problem, and an object of this invention is to ease the burden of a system administrator or an operator.

[0013]

[Means for Solving the Problem]A network photo service system of this invention manages storage limitation of a picture to the distributed type above-mentioned system, and includes a function which distinguishes automatically a picture over which storage limitation passed, and eliminates it in it.

[0014]This invention is installed in a lab which has a photographic printer, and via a network

Namely, at least one laboratory server which can communicate, It is installed in a service center which accepts an order of print service via a network, Keep a digital image which belongs to a customer of each of said lab, and this digital image is exhibited on a network, According to ordering information transmitted via a network, one lab in said lab is chosen from a customer who perused an exhibited digital image as the print output point, In order to provide for a customer print service which transmitted directions information to a laboratory server installed in a this selected lab, and was demanded by said order, it is characterized by a network photo service system comprising the following.

a time check in which it is the system constituted [ processing and ] by a center server to direct, and said center server manages time -- a means.

memorizing storage limitation of said digital image -- a lapse period from a storage opening day -- said time check -- a period management means to detect expiration by measuring by a means.

An expiration image erasing means which eliminates a digital image of expiration in a digital image which the center server concerned keeps.

[0015]A "laboratory server" is a server computer installed in an individual lab like a shop front mini-laboratory here, and a "center server", It is a server computer installed in a service center which carries out central control of the digital image, and all are provided with data storage equipment, such as a hard disk which has sufficient capacity to keep required image data. A laboratory server plays a role of what is called a printer server, and is connected to a photographic printer (when there are two or more photographic printers, it connects switchable).

[0016]"An order of print service is accepted via a network" means having an order content transmitted as ordering information of a predetermined data format from a customer. It is a homepage of the Internet, for example, and if a customer inputs an order content, specifically, the contents will be automatically changed into a format of ordering information. Or I may exhibit a format of ordering information to a customer, and get a customer to create ordering information according to the format, and an order may be accepted by having you transmit to a center server by E-mail.

[0017]"A digital image which belongs to a customer of each lab" means a digital image which read a film carried into the lab by a film scanner, and acquired it, in order that a customer of each lab may request simultaneous printing. Or a digital image acquired from a memory etc. of a digital camera which a customer similarly carried in using various data reading transfer means, such as a card reader, is also contained.

[0018]although such read processings are good in a line (by central laboratory method) in a service center, if it carries out in each lab, abolish collection-and-delivery time and collection-

and-delivery waiting time -- a delivery date can be shortened by that of \*\*. In this case, although work which moves a digital image acquired in a lab to a center server is needed, Using the above-mentioned network, this may perform data transfer to a center server, whenever the lab side acquires a digital image, or it summarizes it to predetermined timing, and it may be made to transmit it to the center server side. Or a center server may suck up data of a laboratory server of each lab periodically, and it records on a certain media, without using a network depending on the case (when there is much data volume), and may be made to move data.

[0019]A "network" shall mean a network network centering on the Internet here, and a dedicated line, a CATV network, dialup connection, LAN, etc. shall include all means of communication that have sufficient transmission speed to perform transmission of ordering information or image data.

[0020]Saying ", according to ordering information, one lab in said lab is chosen as the print output point." For example, when print services demanded by order are the services which need equipment special in order to perform it, such as a postcard containing a photograph, and creation of a calendar, it means choosing a lab which has the special equipment as the print output point etc. Or as a customer can specify a lab which receives a print, it may be made to choose the specified lab including information which shows the appointed lab as the print output point into ordering information. Also when there is only one lab and it chooses the lab as the print output point, it shall contain in the above "selection."

[0021]"Processing for providing print service for a customer" means any processings which are needed in order to provide print service for a customer. For example, since an extra copy print cannot be created if a digital image of the photograph does not come to hand when an extra copy print of a photograph with a certain lab is directed, I need to have a digital image transmitted from others. That is, "processing for providing print service for a customer" means a series of processings not only including a print output with a mere printer but such data transfer processing etc.

[0022]"Ordering information" is a treating number which specifically specifies service contents (an extra copy, postcard creation, etc.), picture ID which specifies a picture, size of a print, number of sheets, etc. In addition to the contents of ordering information, "directions information" includes information which shows an acquisition place (keeping destination) of a digital image, etc. In this case, a laboratory server which received directions information requires transmission of a digital image from a laboratory server of a lab shown as an acquisition place, or a center server, when oneself is not keeping a required digital image. Or the needed digital image itself may be included in a part of directions information.

[0023]moreover -- "-- a time check -- means" is a clock function with which a computer is provided, for example, when current time is notified according to a demand from an application

program or it reaches at time set up beforehand, they is things, such as a function to generate an interrupt signal.

[0024]A "period management means" is realizable as an expiration decision program periodically executed with period information which recorded storage limitation of each digital image (or the image group with same storage opening day), for example (at time [ For example, every day a law ]). It is judged whether storage limitation of each digital image has run out by comparing with a date of the day storage limitation currently recorded on period information as an expiration decision program, for example, A program etc. which repeat processing in which ID of the digital image, etc. are notified to an image erasing means when a term has expired, for every registered digital image can be considered. Period information may be held as a table which matched picture ID and storage limitation, and may be held by attaching storage limitation of the picture to each picture as attendant information.

[0025]In this invention, when a period management means remembers substantially a storage end date "memorizes storage limitation" by [ which memorize storage limitation i.e., a storage end date, literally ] memorizing two information, a storage opening day and a storage time, remarkably, it shall contain.

[0026]An "image erasing means" is a means to search and eliminate a digital image shown by picture ID notified from the above-mentioned period management means.

[0027]By network photo service, a case where a user wishes extension of storage limitation can be considered. Therefore, as for a period management means of said center server, it is desirable to also have a function which updates memorized storage limitation at storage limitation of which it was required by customer according to a storage limitation extension requirement transmitted via a network from a customer.

[0028]Here, a "storage limitation extension requirement" is the data of a predetermined format in which picture ID and an extension period (or new term) were described, for example. Extension of storage limitation may be received for each picture of every, and may be received for every image group with same storage opening day.

[0029]A storage limitation extension requirement may be defined as said a part of ordering information, although it may be data of a format which consists only of above-mentioned registration ID or an extension period.

[0030]Although storage limitation is usually set on the basis of a storage opening day like one month from a storage opening day of a picture in many cases, since a picture with a print order has a high possibility that an order will be placed again, there is to set storage limitation on the basis of the newest date of acceptance (day which finally had an order) of an order.

[0031]Therefore, said storage limitation is made into a term determined based on the newest date of acceptance of an order about a digital image, Whenever the center server concerned accepts an order of print service, a period management means of said center server, It may be

made to update at storage limitation which storage limitation of a digital image specified as a print object was redetermined [ storage limitation ] based on a date of acceptance of the order concerned, and had memorized storage limitation determined.

[0032]For example, when the one-month back of a storage opening day is made into storage limitation and a print order is received to a storage time at first, storage limitation is extended to the one-month backward of the day, and a gestalt etc. which will be eliminated if there is no order new by the storage limitation can be considered.

[0033]Here a network photo service system of this invention as mentioned above in order to perform a print output in a lab each laboratory server, It is desirable to have a high-resolution-images storage means which keeps a digital image which processed the above-mentioned film reading etc. and was acquired in a lab in which the laboratory server is installed as a high-resolution image data. When an order for increase of customer baking of the lab, etc. is placed by this, it becomes unnecessary for a digital image to come to hand from others.

[0034]However, when each laboratory server is keeping a digital image of a customer of the lab in this way and storage limitation goes out, it is necessary to eliminate a digital image which a center server keeps, and a high-resolution image data both which a laboratory server keeps.

[0035]Therefore, besides the high-resolution-images storage means above-mentioned to said each laboratory server, It has a high-resolution-images erasing means which eliminates said high-resolution image data according to directions from said center server, While an expiration image erasing means of said center server eliminates a digital image of expiration in a digital image which the center server concerned keeps, It is desirable to make it direct elimination of a high-resolution image data corresponding to a digital image of said expiration to a high-resolution-images erasing means of said laboratory server.

[0036]On the other hand, when a laboratory server is keeping a high-resolution image data, a gestalt to which a center server and a laboratory server carry out period management separately, respectively is also considered.

[0037]Namely, a high-resolution-images storage means which keeps a high-resolution image data in which said each laboratory server was acquired in a lab in which this laboratory server is installed, a time check which manages time -- remembering storage limitation of said high-resolution image data to be a means -- a lapse period from a storage opening day -- said time check -- with a period management means to detect expiration, by measuring with a function. It may have an expiration high-resolution-images erasing means which eliminates a high-resolution image data of expiration in a high-resolution image data which the laboratory server concerned keeps.

[0038]However, since an extension requirement of storage limitation from a user is received by a center server which provides a user interface, a laboratory server in a gestalt provided with a

period management means. A period management means of each of said laboratory server shall update storage limitation memorized according to directions from a center server. While a period management means of said center server updates memorized storage limitation at storage limitation of which it was required by customer according to a storage limitation extension requirement transmitted via a network from a customer, Extension of storage limitation is realized by directing renewal of storage limitation to a period management means of said laboratory server.

[0039]Since reception of an order is performed by center server also when setting storage limitation on the basis of the newest date of acceptance, when an order is accepted, it is necessary to direct extension of storage limitation to a laboratory server from a center server.

[0040]Namely, said storage limitation is a term determined based on the newest date of acceptance of an order about a digital image, A period management means of each of said laboratory server is what updates storage limitation memorized according to directions from a center server, Whenever the center server concerned accepts an order of print service, a period management means of said center server, While updating at storage limitation which storage limitation of a digital image specified as a print object was redetermined [ storage limitation ] based on a date of acceptance of the order concerned, and had memorized storage limitation determined, it is desirable to make it direct renewal of storage limitation to a period management means of said laboratory server.

[0041]When each laboratory server is keeping a digital image of a customer of the lab in this way, a digital image which is kept by center server and opened to it is good also as low resolution image data with less data volume than a high-resolution image data kept by said laboratory server. That is, as for a digital image of a laboratory server, a digital image of an object for print outputs and a center server may use a digital image properly like an object for the inspection on a network.

[0042]

[Effect of the Invention]The network photo service system of this invention memorizes the storage limitation of a digital image to the server computer (center server) which performs registration of storage of a picture, public presentation, and a print order, etc., detects expiration to it, and equips it with the function which eliminates an expiration picture. Thereby, without troubling the hand of a system administrator or an operator, since it is eliminated automatically, the digital image in which storage limitation went out can utilize storage facilities, such as a hard disk, effectively, and can reduce storage cost.

[0043]If the above-mentioned center server is equipped with the function which updates automatically the storage limitation memorized according to the extension requirement of the storage limitation transmitted by the user via the network, a user's extension-of-a-deadline demand can also be satisfied flexibly.

[0044]The print order reception function of the above-mentioned center server and the controlling function of storage limitation are made to cooperate, The storage limitation of a digital image specified as a print object whenever it accepted the order of print service is redetermined based on the date of acceptance, If the above-mentioned center server is equipped with the function updated automatically at the storage limitation which had the memorized storage limitation determined, it will be kept for one month after the last date of an order, and according to order states, storage limitation can be set as it will eliminate, if there is no re-order in the one month.

[0045]In keeping the high-resolution image data for print outputs in the server computer (laboratory server) of each lab, By adding further the function to direct elimination of an expiration picture to a laboratory server to the above-mentioned center server, Or by equipping a laboratory server with a function equivalent to the period management function of the above-mentioned center server, both high-resolution image datas which the digital image and each laboratory server for the inspection currently kept by the center server keep are simultaneously eliminable. Since it becomes a big burden especially for a system administrator to manage the picture kept at two places by a help, the practical effect of automating period management by this invention is large.

[0046]When providing a period management function in a laboratory server, and a center server receives a storage limitation extension requirement, it points to the renewal of storage limitation to a laboratory server, When a laboratory server updates the storage limitation which oneself has memorized according to the directions, the above-mentioned storage limitation extension service can be realized, and it can cater to a user's request finely.

[0047]If it points to the renewal of storage limitation to a laboratory server and a laboratory server updates storage limitation similarly according to the directions when a center server receives a print order, The service which updates storage limitation like the case where period management is performed, according to order states only by the above-mentioned center server side is realizable.

[0048]Since the picture which a center server keeps is used only for an inspection when a laboratory server keeps a high-resolution image data, if it is made to keep the low resolution image data only for an inspection to a center server, the picture storage cost by the side of a center server can be held down.

[0049]

[Embodiment of the Invention]Hereafter, the 1 embodiment of this invention is described with reference to drawings. First, the outline of a network photo service system is explained.

[0050]Drawing 1 is a figure showing the overview of the network photo service system in the 1 embodiment of this invention. The service center 2 where this system accepts a service order as shown in drawing 1, When the special lab 4 provided with the mini-laboratory 3 or special



appliances which performs a print output exchanges information mutually via the Internet 5, digital photograph service is provided on a network to the user 1. Under the present circumstances, although it is realizable of connection with the Internet according to all publicly known gestalten, such as a dedicated line, dialup connection, and a CATV network, since a service center and the special lab need to perform many communications especially, connection by a high speed system dedicated line is desirable [ the lab ].

[0051]The input of the image data to this system is performed in the mini-laboratory 3. For example, although a film is developed, the film developed negatives is usually read with the scanner 7 and simultaneous print service which creates a print with the printer 9 is performed in the mini-laboratory 3. If registration of a picture is also requested at the time of a request of this simultaneous print service, the image data read in the film will be registered into the database which the laboratory server 8 manages, and the paper which registration ID and the registered password of the picture described with the print will be returned to a user.

[0052]Drawing 2 is the figure which expressed to the internal configuration of the laboratory server 8 of the user's 1 personal computer 6, the center server 12 of the service center 2, the mini-laboratory 3, or the special lab 4 paying attention to the system of drawing 1.

[0053]As mentioned above, when a user requests registration of a picture, the image data read in the film 13 with the scanner 7 is registered into the high-resolution-images database 18 which the laboratory server 8 manages with the image registration function 17 of the laboratory server 8. In the laboratory server 8, the low resolution image data (henceforth a thumbnail image) on which the resolution of those image data was dropped is created, and it registers with the low resolution picture database 16 which the center server 12 manages with the image registration function 17 of a laboratory server and a center server.

[0054]The image data kept by the high-resolution-images database in this embodiment, L size print is used as four bases (pixel number about 1024x1792) which are pixel numbers required to output by 300dpi, and, on the other hand, the thumbnail image for an inspection is used as 1/4 base (pixel number about 368x256).

[0055]The center server 12 of the service center 2 provides various services including print service to the user 1 by exhibiting on a network the thumbnail image registered into the above-mentioned low resolution picture database 16.

[0056]The above-mentioned various services are provided by the WWW application server 15 with the gestalt of a homepage. A program required in order to use the above-mentioned service to the user 1 is provided beforehand. For example, in the example of drawing 2, by including in WWW browser 21, a user is provided with the plug-in 22 for digital photograph service which makes possible the inspection of the registered image by the browser 21, download, a print order, etc., and it is built into the personal computer 6. A user builds this plug-in into browsers, such as Netscape Navigator, By accessing the homepage of the center

server 12, the above-mentioned thumbnail image can be perused and various digital photograph services of print service etc. can be further required about the perused picture.

[0057]For example, in order that a user may demand print service, when ordering information, such as picture ID of a print object, print number of sheets, and print size, is inputted, The order file 14 of the predetermined data format those ordering information was described to be is created, and this order file 14 is transmitted to the application server 15 of the center server 12.

[0058]The WWW application server 15 distinguishes the lab where the high-resolution image data of the picture is kept from picture ID described in the order file, and transmits the order file 14 to the laboratory server 8 of the lab. The laboratory server 8 analyzes the contents of the order file by the order file analysis feature 20, The image data of a print object is read from the high-resolution-images database 18, expansion, reduction, or other image processing are performed if needed to the read image data (not shown), processed image data is transmitted to the printer 9, and a print output is directed.

[0059]The means for realizing hereafter the controlling function of the storage limitation which is the feature of this invention is explained. The example shown below is an example of the system which extends storage limitation till the day one month after the day when an order was finally, when there is an order about the picture which makes storage limitation one month from a registration date, and is kept. Especially this system extends storage limitation, also when there is a request of extension of a deadline from a user. The picture which passed over storage limitation is eliminated automatically.

[0060]Drawing 3 shows the system of drawing 2 paying attention to the means for realizing the above-mentioned storage limitation controlling function. As shown in drawing 3, the center server 12 is equipped with the clock function 23 for realizing the controlling function of the above-mentioned storage limitation, the period management means 24, and the image registration/erasing means 25. The period management means 24 is an exclusive program for realizing a storage limitation controlling function, and performs judgment of expiration, and renewal of storage limitation.

[0061]Although the clock function 23 is a function which manages the date and time, since the computer is provided with such a function as standard in many cases, it can usually use it as it is.

[0062]When the image registration / erasing means 25 of a center server register a thumbnail image into the low resolution picture database 16, it acquires storage limitation from the period management means 24. As mentioned above, in this embodiment, since storage limitation is one month, the period management means 24 notifies the date one month after the day as storage limitation to image registration / erasing means 25. Image registration / erasing means 25 records the storage limitation 31 it was notified to the file header of the picture that was the

storage opening day 30 as shown in drawing 4 with picture ID29. The information about storage limitation is similarly recorded on a file header about the high-resolution image data kept by the high-resolution-images database 18.

[0063]The period management means 24 is the time set up beforehand or the time interval set up beforehand, and performs decision processing of expiration. For example, if a user sets up the execution time of erasing processing like "every day 8 o'clock" or "24 time intervals", expiration decision processing will be automatically performed at the time set up with the function of the clock function 23.

[0064]The period management means 24 acquires the date of the day by the clock function 23 first, and compares it with the date of the day with reference to the storage limitation currently recorded on the graphics file (thumbnail image) currently kept by the low resolution picture database 16 next. When the storage limitation currently recorded on the graphics file is a date older than the date of the day, the period management means 24 judges with the thumbnail image being an expiration picture. This processing is repeated about all the pictures currently kept by the low resolution picture database 16. Picture ID of the thumbnail image judged to be expiration is notified to image registration / erasing means 25.

[0065]Image registration / erasing means 25 erases registration of the thumbnail image of notified picture ID from the low resolution picture database 16 (the thumbnail image currently kept is eliminated). Picture ID furthermore notified is transmitted to the image registration / erasing means 17 of the laboratory server 8. The image registration / erasing means 17 of the laboratory server 8 erase registration of the high-resolution image data of notified picture ID from the high-resolution-images database 18.

[0066]Next, the update function of the storage limitation of the period management means 24 is explained. When the WWW application server 15 receives the order file 14 from a user, it directs extension of the storage limitation for one month to the period management means 24. When the WWW application server 15 receives the extension-of-a-deadline demand 26 from a user, it notifies picture ID and the term of choice which were specified by the user to the period management means 24, and directs extension of storage limitation. The period management means 24 rewrites the storage limitation 30 (drawing 4) in a file header of the applicable thumbnail image in the low resolution picture database 16 according to these directions. Thereby, in the expiration judging performed henceforth, the term after updating is the target of a judgment.

[0067]The controlling function of storage limitation can be realized also by composition shown in drawing 5. Drawing 5 also equips the laboratory server 8 with the period management means 28 to drawing 3 having been a gestalt which performs period management only in the center server 12 side.

[0068]In this gestalt, when expiration is detected by the period management means 24 of the

center server 12, image registration / erasing means 25 eliminates only the thumbnail image in the low resolution picture database 16, and does not perform the directions to the laboratory server 8. The laboratory server 8 performs the same expiration decision processing as the period management means 24 of the center server 12 by the period management means 28 of the laboratory server 8, and directs elimination of the expiration picture currently kept by the high-resolution-images database 18 based on the decision result to image registration / erasing means 17.

[0069]Since the storage limitation same at the time of registration of a picture as the header of a thumbnail image and a high-resolution image data is recorded in the gestalt of drawing 5, Even if the center server 12 and the laboratory server 8 perform expiration judging and elimination of a picture independently, a thumbnail image corresponding as a result and high-resolution image data will be eliminated on the same day. When the extension-of-a-deadline demand 26 and the order file 14 are received and the storage limitation of a thumbnail image is updated by this, the storage limitation of a thumbnail image and a high-resolution image data stops however, being in agreement in the center server 12. Then, when the extension-of-a-deadline demand 26 or the order file 14 is received in this embodiment, The period management means 24 of a center server receives the period management means 28 of a laboratory server, He is trying for the storage limitation of a thumbnail image and a high-resolution image data to be always in agreement by rewriting the storage limitation of an applicable high-resolution image data based on the contents notified the storage limitation after picture ID and updating, and it was notified that the period management means 28 of a laboratory server were.

[0070]The gestalt of drawing 3 is structurally easier than the gestalt of drawing 5, and realization is also easy. However, with the gestalt of drawing 3, in order to have to transmit the information for directing elimination of an expiration picture from a center server to a laboratory server whenever expiration decision processing is performed, traffic increases. On the other hand, except for the case where a term is changed, it is not necessary to communicate between a center server and a laboratory server in the gestalt of drawing 5.

[0071]In the gestalt of drawing 5, also with the picture which was not registered into a center server, each lab can set original storage limitation in the lab, and can perform period management. That is, storage limitation is manageable similarly about the picture of the user using network photo service, and the picture of the user who does not use.

[0072]As mentioned above, according to the explained system configuration, the purveyor of service of network photo service can eliminate the picture of expiration efficiently, without troubling the hand of a system administrator or a system operator.

[Translation done.]